COLORADO
Department of Public Health & Environment

April 21, 2020

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RE: Final State RCRA Hazardous Waste Permit for Denver Arapahoe Chemical Waste Processing Facility (DACWPF), Response to Comments; EPA ID No.: COD000695007

Mr. Schweitzer, Ms. Dombrovski, and Ms. Smolen:

The Colorado Department of Public Health and Environment, Hazardous Materials and Waste Management Division (the Division) has made a final determination to approve the draft renewal of the Post-Closure Care permit for the Denver Arapahoe Chemical Waste Processing Facility (DACWPF) with the changes outlined in the attached response to comments in accordance with 6 CCR 1007-3, Section 100.511. An electronic copy of the final Permit is attached. Additionally one hard copy will be sent via certified mail to Waste Management.

The Division received three comments on the draft DACWPF Post-Closure Care Permit. The Division has prepared a final response to all the comments which is attached to this correspondence.

Issuance of the permit decision constitutes final agency action for the purposes of judicial review. The attached permit will become effective within thirty (30) days of the issuance date of the Permit. Procedures for appeal of State RCRA permits are found in 6 CCR 1007-3, Section 100.514.

If any technical question, comment, or concern should arise regarding this correspondence please contact Mr. Richard Mruz of my staff at (303) 692-3332 or via email at richard.mruz@state.co.us. For any legal matter please contact Mr. David Kreutzer at david.kreutzer@coag.gov or via phone at (720) 508-6270.

Sincerely,

Robert Beierle

Robert Beierle, Unit Leader
Hazardous Waste Corrective Action Unit
Hazardous Materials and Waste Management Division
Colorado Department of Public Health and Environment

Attachments: Division responses to DACWPF draft permit public comments
Final DACWPF Post-Closure Care Permit

Denver Arapahoe Chemical Waste Processing Facility
Draft Permit Public Comment Responses

Arapahoe County Public Works and Development

Comment 1: "The applicant should ensure continued compliance with all state and federal requirements."

Response: Through this permitting process Waste Management of Colorado is made aware of this comment. No changes have been made to the final permit due to this comment.

Comment 2: "The applicant should be mindful of new or changing development in the vicinity, as new development may affect proper storage and protection of the materials."

Response: Through this permitting process Waste Management of Colorado is made aware of this comment. No changes have been made to the final permit due to this comment.

Comment 3: "The applicant should reach out to Colorado Department of Wildlife and/or a similar entity to ensure potential impacts on wildlife have been properly mitigated."

Response: Through this permitting process Waste Management of Colorado is made aware of this comment. No changes have been made to the final permit due to this comment.

Comment 4: "The applicant should reach out to the State Water Engineer or other relevant water resource to ensure all necessary water protection measures are in place."

Response: Through this permitting process Waste Management of Colorado is made aware of this comment. As an implementing agency for the Water Quality Control Division, the Division ensured waters of the State are being protected. No changes have been made to the final permit due to this comment.

Comment 5: "Proper safety of the staff or contractors involved in testing and maintenance of the site should be prioritized."

Response: The Division has noted this comment. No changes have been made to the final permit due to this comment.

Comment 6: "Emergency access and procedures should be updated regularly to ensure efficient response should there be an incident."

Response: The Division has noted this comment. No changes have been made to the final permit due to this comment.

Comment 7: "Are there protections in place in case of ground disturbance, seismic activity, or another event that may compromise the reliability of the substrate and the liner?"

Response: There are several protections in place. For example, the facility is required to inspect and maintain site security, inspect and maintain the cover, monitor leachate, pump, remove and properly dispose of any accumulated leachate, monitor groundwater, and report to the Division. Additionally, an institutional control has been drafted and will likely be recorded this year. There are a number of land-use restrictions within that institutional control that will provide another layer of protection.

Comment 8: "The Arapahoe County Comprehensive Plan has Goals, Policies, and Strategies pertaining to the Denver Arapahoe Disposal Site and the Lowry Superfund Site in the area. Review Goal RDS GM 1 and the subsequent Policies and Strategies for compliance."

Response: The Division has noted the cited information in the Arapahoe County Comprehensive Plan. No changes have been made to the final permit due to this comment.

Paula Smolen (Lowry Landfill Community Advisory Group) comments

Comment 1: "Has there ever been an issue with the data collected from the monitoring wells?"

Response: Overall, data collected from onsite monitoring wells have been very reliable.

Comment 2: "You know that well P114a had a very high pH level and needed to be replaced – What causes that higher reading? What does that mean?"

Response: Monitoring well P-114A was replaced in 2016 due to observed well integrity issues in the later part of 2015. A video scope indicated that a well seal was failing. Wells are constructed using bentonite and other materials that have higher pH levels. Integrity issues could lead to high pH levels in groundwater samples. If monitoring wells are no longer producing reliable data they need to be replaced. Another monitoring well (P-114A-R) was drilled in close proximity to P-114A. So far, data collected from the replacement well have been reliable and have been similar to previous data. This further suggests that the previous pH levels were anomalous and did not represent accurate groundwater chemistry.

Comment 3: What does "changing action levels for containment in leachate" mean? One of the three minor changes noted on the Fact Sheet."

Response: Action levels are specific concentrations of constituents of concern that if exceeded demand action. If concentrations found in the leachate exceed action limits, the facility is required to monitor underlying shallow groundwater. During this renewal period the Division reviewed previous action levels, which were primarily based on multiples of laboratory analyses limits. The Division revised these levels to match, or be more comparable to, groundwater standards.

Comment 4: "The flow is west from the containment site. I see Murphy Creek to the West. Is any of the getting into Murphy Creek? Or in the other ground water sources we have concern about?"

Response: Based on thirty years of corrective action data, there has been no indication that DAWPF has contaminated Murphy Creek or other groundwater. Historic data indicates that the double lined DACWPF disposal cell is performing its intended function to contain solidified hazardous wastes. During this permit renewal process revisions have been made to leachate action levels. The new action levels are more protective of groundwater.

Comment 5: "Is there any co-mingling of the COCs in that leachate with that of LLSS site? How do you know?"

Response: The contaminants of concern found at DACWPF are being monitored in the primary and secondary leachate collection systems as well as in an underlying groundwater aquifer. No detectable concentrations of contaminants have been found in the secondary system or

groundwater. If action levels are exceeded in the secondary leachate collection system more monitoring wells are to be installed and other, shallower, aquifers will be tested.

Comment 6: "Are there any air borne chemicals that contain COCs or other things we should be aware of?"

Response: The wastes disposed of at DACWPF are buried and subsequently capped. There has been no indication that air borne chemicals are emitting from DACWPF at concentrations of concern.

Waste Management of Colorado (WMC) comments

Comment D.1.: "The second paragraph in Section 2.3 should be changed as shown in Exhibit A to account for the addition of the new constituent – PFOA/PFOS – which are neither VOCs nor metals."

Response: The Division agrees with this comment. The text in Section 2.3 has been amended in the final permit to reflect the proposed change (as found above in Comment D.1.).

Comment D.2.: "Steps 3 and 5 of Section 2.4 should be changed as shown in Exhibit A to delete the sampling reference in Step 3 (which is limited to well purging) and include the sampling reference in Step 5 (which explains sample handling)."

Response: The Division agrees with this comment. The text in Steps 3 and 5 of Section 2.4 has been amended in the final permit to reflect the proposed change (as found above in Comment D.2.).

Comment E.1.: "The Action Limits for the existing Secondary Leachate Detection System Analytes should not be changed; and the Action Limit for the new indicator analyte – PFOA/PFOS – should be set no lower than 13.6 µg/L."

Response: New action limits were set to match risk based groundwater standards. If concentrations of constituents in the secondary containment exceeds standards, groundwater monitoring needs to be performed to demonstrate that releases above standards are not occurring from the DACWPF disposal cell. The secondary containment system is the last line of defense prior to the natural environment and waters of the State.

There is currently no specific groundwater standard listed in the Water Quality Control Commission's Regulation No. 41, "The Basic Standards for Ground Water", for PFOA/PFOS. The U.S. EPA has issued a Drinking Water Health Advisory for PFOA/PFOS of 0.070 micrograms/liter (ug/L). Above this level EPA recommends that drinking water systems takes steps to assess contamination, inform consumers and limit exposure. Based on the results of internal meetings, and external meetings with WMC, the Division has further revised Table G-1 and set the PFOA/PFOS action level to 0.2 ug/L. Raising the PFOA/PFOS action level greater than 0.2 ug/L would not be considered protective of human health and the environment because PFOA/PFOS is known to be present in the primary leachate at 1.2 ug/L.

Comment E.1.a.: "Action limits for existing analytes should not be changed."

Response: The Department understands how the Action Limits in the original permit were derived. When evaluating PFAS in the permit renewal it became evident that the Action Limits in the original permit were based on multiples of laboratory analysis limits, and couldn't be justified given today's standards. Therefore, the Action Limits for all constituents in Table G-1 were set to risk based groundwater standards. The Action Limits trigger groundwater monitoring well installation to monitor for potential releases and have nothing to do with WMC's conditional delisting.

Golder's January 10, 2020 Technical Memorandum on dilution factors and travel times model migration only from the secondary sump area, vertically down to the lower sandstone unit and then to an existing compliance monitoring well. The Department has determined that releases from the landfill could occur anywhere in the landfill footprint, not necessarily only from the sump area. According to Golder's model it would take contaminants approximately 3,600 years to migrate from the cell to wells positioned in the lower sandstone. The model also establishes a dilution factor of 181, meaning that any contaminant concentrations found in the lower sandstone aquifer would be 181 times less than what is detected in the secondary sump.

The permit allows disposal of hazardous wastes in a contained cell, requires the cell to be monitored for releases to the environment, and requires a response when contaminants are released. This Post-closure Care Permit does not allow leachate disposal in any of the underlying subsurface.

Comment E.1.b.: "Action limit for PFOA/PFOS should be set no lower than 13.6 ug/L."

Response: The Action Limits set in the original permit were primarily based on multiples of laboratory detection limits, not upon groundwater protection. Standards in the new permit are set to protect groundwater. Water in the area of the landfill is not currently consumed by humans, but that doesn't justify contaminating it.

The Risk Based Screening Levels (RBSLs) derived by WMC over two decades ago appear to evaluate the risk posed by applying the leachate as a dust suppressant onto the adjacent Denver Arapahoe Disposal facility, which is related to WMCs conditional delisting of the leachate. The Department doesn't see the connection between spraying the leachate as a dust suppressant at the Denver Arapahoe Disposal Site (DADS) Landfill and allowing it to be released into the subsurface environment.

The procedures used to comply with the delisting are not specified in the final permit. The delisting will be re-evaluated considering new sampling information and addressed at a later date when more information becomes available, if warranted.

Comment E.2.: "The Action triggered by a confirmed detection in the secondary sump should be limited given the unique site characteristics of DACWPF."

Response: Installing monitoring wells and sampling and analyzing groundwater from wells in the upper and intermediate sandstone units will provide groundwater quality information in closer proximity to the DACWPF disposal cell than the wells in the lower sandstone unit. Information from the upper and intermediate units will assist the Department's determination whether or not the disposal cell is releasing leachate to the environment and contaminating groundwater above standards.

Based upon the computer modeling performed by Golder that indicates it could take thousands of years to detect a release in the lower sandstone unit, making monitoring in the upper and intermediate sandstone especially important. Earlier detection of a release would aide in adequately implementing corrective action. The more time that passes after a release increases the difficulty of adequately characterizing the release and taking corrective action measures.

DACWPF's permit requires groundwater chemistry monitoring in the lower sandstone groundwater aquifer. Under normal conditions, the Upper and Intermediate Sandstone units are only monitored for fluid levels and no samples are collected and analyzed in these shallower units. Any releases to the Upper and Intermediate Sandstone units have the potential to migrate laterally outside and past the current "RCRA Wells" monitored in the Lower Sandstone. Releases from the DACWPF disposal cell could conceivably by-pass the current groundwater quality monitoring network. Therefore, it is important to monitor the Upper and Intermediate sandstone units if contaminants are detected in the secondary sump above action levels.